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(54) **SYSTEM AND METHOD FOR OPHTHALMIC SURFACE MEASUREMENTS BASED ON OBJECTIVE QUALITY ESTIMATION**

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See application file for complete search history.

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(57)

ABSTRACT

Systems and methods for measuring a topography of an optical tissue surface of an eye are provided by combining a measured elevation of the surface with a priori information of the surface to provide an estimate of mean and covariance of post-measurement orthogonal polynomial sequence amplitudes associated with the surface, determining a variance of elevation of the surface from the estimate, and constructing the topography from the estimate of mean and covariance of post-measurement amplitudes based on a comparison of the variance of elevation of the surface with a pre-determined threshold. The a priori information includes an estimate of mean and covariance of pre-measurement orthogonal polynomial sequence amplitudes associated with the surface.

12 Claims, 31 Drawing Sheets

